

Confirmation of the presence in Québec of Asian carps

CONTEXT

The four species of Asian carps have a significant impact on the environments that they colonize and pose a serious threat to Québec's freshwater ecosystems. Grass carp is already established in the Great Lakes river system and silver carp and bighead carp are set to enter it. Black carp is still confined to the southern portion of the Mississippi drainage basin in the United States.

The Ministère des Forêts, de la Faune et des Parcs (MFFP), which is responsible for sustainable wildlife management in Québec, has elaborated the Québec program to fight Asian carps, which includes an early detection section that facilitates prompt intervention.

The analysis of animal DNA fragments in the environment, commonly called environmental DNA (eDNA), is a revolutionary technique that is especially effective to detect the presence of aquatic invasive species when they are still in low abundance.

eDNA DETECTION OF ASIAN CARPS

The MFFP has worked with Université Laval professor Dr. Louis Bernatchez, who holds the Canada Research Chair in Genetic Conservation of Aquatic Resources, to document by means of eDNA analyses the possible presence in Québec of three species of Asia carps, i.e. grass carp, silver carp and bighead carp.

Within the framework of the study, conducted between 2015 and 2017, grass carp DNA was detected at 16 of 110 sites analyzed for this species. The positive samples are distributed in the St. Lawrence River from Lac Saint-François to the Lac Saint-Pierre archipelago, and in the downstream sector of the Rivière Richelieu and the Rivière Saint-François (see the diagram).

No trace of silver carp or bighead carp DNA has been detected in the samples analyzed for these species.

CONCLUSIONS

The presence of grass carp in the St. Lawrence River system has been confirmed scientifically. The following factors exclude any other possibility:

- the high number of detections of grass carp DNA;
- the location of the detections in independent water bodies;
- the temporal recurrence of the detections;
- knowledge of the limits of persistence and variation of the DNA;
- the capture of a grass carp in the St. Lawrence River in May 2016.

The absence of detection of silver carp and bighead carp DNA suggests that the species are still not present in the St. Lawrence River.

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